Massachusetts Department of Environmental Protection
DRAFT – SCOPE-OF-WORK - DRAFT
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2016 Construction and Demolition Debris Industry Study

Background:

MassDEP amended its regulations at 310 CMR 19.017 in 2006 to include asphalt pavement, brick, concrete, metal and wood to its list of materials banned from disposal. In 2007, MassDEP engaged a consultant to assess the impact of the material-specific waste bans on the C&D industry. Now ten years later, and subsequent to imposition of an additional material-specific ban affecting Clean Gypsum Wallboard in 2011, MassDEP will re-assess the status of the C&D material management industry by focusing on three main areas of investigation:

1. Characterize the quantity and composition of C&D derived materials and the by-products of C&D processing generated by current construction, renovation and demolition activities in Massachusetts;
2. Assess the capacity of the existing recycling end-market providers; and identify the potential capacity of unrealized recycling end-market opportunities;
3. Evaluate opportunities to increase recycling at C&D processors and reduce dependency on diminishing markets (e.g. landfill dependant use applications) for C&D fines and C&D residual byproducts.

Sequencing of Tasks:

1. Conduct assessment of the quantity and composition of C&D derived materials generated by construction, renovation and demolition activities
    a. Characterization of C&D Derived Wood and other C&D derived materials (e.g. gypsum wallboard, asphalt shingles, etc.) received for processing
    b. Selection of the two highest priority C&D materials in addition to wood (based on the results of the characterization in Step 1a) to be carried through the subsequent end market capacity analysis
2. Conduct Characterization of C&D Fines and C&D Residuals byproducts
3. Conduct capacity analysis of current and potential future recycling end markets for the selected categories of C&D derived materials (characterized in Step 1) and C&D byproducts (fines and residuals characterized in Step 2); and
4. Evaluate processing advancements, which if implemented, could improve value of C&D derived materials and byproducts of processing for recycling end-markets.

Scope of Work:

TASK 1. Characterize the Quantities and Composition of C&D Derived Materials

Using available annual solid waste report data augmented by site visits to C&D processors and C&D generators, as necessary, assess the quantities and characteristics of C&D derived wood and other C&D derived materials generated by construction, renovation and demolition activities in Massachusetts.

Specific tasks will include:

- Researching existing data on the quantities and types of C&D derived materials generated in the current construction and demolition market in Massachusetts;
- Researching existing data on the composition (with respect to suitability for the various recycling end market alternatives) of the different types of C&D derived materials generated by the current construction and demolition market in Massachusetts;
- Visit select number of C&D processors to validate material quantities and composition
    - 2 processors that typically average >30% recycling
    - 2 processors that typically average <30% recycling, but >20% recycling
    - 2 processors that typically average < 20% recycling
- Provide description of the technologies and operational practices used at the C&D processing facilities identified above; and
- Based on prioritized ranking of materials generated, select two additional C&D Derived Materials (in addition to wood) to be included in End-Market Capacity Assessment

Task 2: Characterization of C&D fines and C&D residuals

Using the same C&D processors identified in Task 1, the consultant will complete a detailed analysis of the typical composition and physical characteristics of C&D fines and C&D residuals generated by processing a mixed C&D waste stream.

<u>C&D fines</u>

- Gross Assessment of component materials by weight
    - Wood, Metal, ABC, Gypsum, Asphalt Shingles, Glass, Paper, Plastic, etc.
- Physical characteristics
    - Particle size distribution
    - Volatile solids content (organic content)

<u>C&D Residuals</u>

- Gross Assessment of component materials by weight
    - Wood, Metal, ABC, Gypsum, Asphalt Shingles, Glass, Paper, Plastic, etc.
- Physical characteristics
    - Particle size distribution
    - Volatile solids content (organic content)

This information will be used to further characterize the recyclable portion of the C&D derived fines and residuals resources, and whether any further processing could extract more value by recycling individual byproduct component materials.

Specific tasks will include:

- Visit representative number C&D processing facilities to collect representative samples of C&D fines and C&D residuals
    - 2 processors that typically average >30% recycling
    - 2 processors that typically average <30% recycling, but >20% recycling
    - 2 processors that typically average < 20% recycling
- Conduct Analysis of material composition and physical characteristics of subject materials.
- Assess opportunities for recycling byproduct component materials as is; and

- Assess whether further processing to recover a larger fraction of the byproduct component materials could result in greater opportunities within the recycling end markets.

Task 3: Assess Current and Future Capacity of Recycling End Markets
Based on outcome of Characterization studies in Tasks 1 and 2, the consultant will assess the capacity of existing and future end markets for recycling the targeted C&D derived materials and the C&D byproduct component materials identified as part of this study.

Specific tasks will include:
- Identify existing markets within and outside of MA that handle C&D derived materials;
- Assess the capacity of existing end market providers for recycling C&D derived materials;
- Assess the projected long-term capacity of existing and future markets; and
- Provide an assessment of the pricing structure and stability of existing and future markets.

Task 4: C&D Processing Advancements
The consultant will evaluate advancements in C&D processing that if applied in Massachusetts could open new recycling end-market opportunities.

Specific tasks will include:
- Research markets currently being used in other geographic areas, which are not currently being used by MA facilities;
- Research markets currently in the R&D phase;
- Research new processing and sorting technologies that will assist in cleaning or reclaiming more of the targeted C&D derived materials that are currently non-recyclable and what level and mechanisms of funding that could be used to help the deployment of these new technologies;

Task 5: Barriers
If during the course of fulfilling Task 1 through 4, the consultant identifies barriers to increasing recycling of C&D material, the consultant will provide a description of those barriers.

Specific tasks include:
- Identify existing building practices, collection & processing infrastructure, price pressures, etc. that impede or promote the ability (or inability) to develop the markets.